

Amendment and Response Under 37 C.F.R. 1.116

Applicant: Harry A. Loder et al.

Serial No.: 09/643,333

Filed: August 22, 2000

Docket No.: 55243US009

Title: OPTICAL FIBER CONNECTOR SYSTEM

REMARKS

The Final Office Action mailed December 17, 2002 rejected claims 8-12 and 23-31.

With this Amendment, claims 23 and 30 are amended, and arguments are presented regarding the patentability of the claims.

Claim Rejections under 35 U.S.C. § 103

Claims 8-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kim et al. (U.S. Patent No. 6,039,585). Kim et al. is cited by the Examiner as disclosing a connector assembly with all the limitations set forth in the claims, except it does not teach that such connector assembly is a backplane connector assembly. The Examiner finds, however, that such connector assembly is commonly used in a backplane connector arrangement and it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Kim et al. to be used in a backplane connection arrangement.

The Examiner's rejection of claims 8-12 under 35 U.S.C. §103(a) is respectfully traversed. As discussed with the Examiner in the telephone interview conducted February 10, 2003, independent claims 8 and 9 both specify "at least one folding door comprising a hinge plate formed integrally with a pair of biasing members to cover the frontal openings of a pair of the plurality of receiving cavities, there being an intervening wall between the pair of receiving cavities". As can be seen from examining Kim et al., leaf spring 42 and resilient sleeve 12 (which together form the door of Kim et al.) cover or close an opening of only a single receiving cavity, even in those assemblies having more than one receiving cavity (see, for example, Figure 17 of Kim et al.).

There is no teaching or suggestion in Kim et al., either implicitly or explicitly, that leaf spring 42 and resilient sleeve 12 may be configured to cover the openings of a pair of receiving cavities as presented in independent claims 8 and 9. Therefore, it is respectfully submitted that Kim et al. does not and cannot make obvious the invention of independent claims 8 and 9, nor claims 10-12 which depend from independent claim 9, as contended by the Examiner. For this

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reason, Applicants' respectfully request withdrawal of the rejection of claims 8-12 under 35 U.S.C. §103(a) and further request allowance of those claims.

Claims 23-29 and 31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Roth (U.S. Patent No. 6,079,881) in view of Kim et al. Roth is cited as disclosing a fiber optic connector for a backplane application with all the limitations set forth in the claims, except it does not teach the single piece integral spring member as a foldable door. However, the Examiner finds that the foldable door piece (leaf spring 42) of Kim et al. is composed of a single piece component effectively closing off the entrance of the connector from any possible contaminants. The Examiner finds it would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the foldable door of Roth with the teachings of Kim et al.

Regarding claim 29, the Examiner finds that Roth does not teach the housing having a plurality of linearly stacked receiving cavities. However, the Examiner finds that backplane fiber optic connector housings having a plurality of linearly stacked receiving cavities are well known and commonly used in the art. Therefore, the Examiner states it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Roth to have a plurality of linearly stacked receiving cavities to provide a high density fiber optic connection.

Claim 23 has been amended to specify that the connector assembly comprises "a single piece integral spring member frontal door **foldable from a single side of the receiving cavity** at least covering a center portion of the frontal opening" and "a single piece integral spring member rear door **foldable from a single side of the receiving cavity** at least covering a center portion of the rear opening". A backplane connector assembly as presented in amended independent claim 23 is not suggested or taught, either implicitly or explicitly, in the prior art. Rather, the prior art teaches either multi-piece doors (as in Roth) or doors which fold from more than a single side of the receiving cavity (as shown in Roth and Kim et al.). None of the prior art shows a single piece integral spring member frontal or rear door **foldable from a single side of the receiving cavity** at least covering a center portion of the frontal or rear opening.

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With the above amendment to independent claim 23, it is respectfully submitted that independent claim 23, as well as claims 24-29 and 31 which depend therefrom, are not obvious over Roth in view of Kim et al. Accordingly, withdrawal of the rejection of claims 23-29 and 31 under 35 U.S.C. §103(a) and allowance of those claims is respectfully requested.

Allowable Subject Matter

The Examiner has objected to claim 30 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner states the reason for the indication of allowable subject matter is that none of the prior art devices clearly teach or suggest a door for fiber optic connector assemblies comprising a single stamped metal part having first and second wings and hinged portion, wherein the hinged portion is attached to a dividing wall between the two adjoining stack of cavities.

With this Amendment, claim 30 is rewritten in independent form including all of the limitations of the base claim and any intervening claims. Withdrawal of the objection and allowance of amended independent claim 30 is respectfully requested.

CONCLUSION

Neither Kim et al. nor Roth disclose or suggest all of the claim amendments of the present invention. The claims of the present invention are neither made obvious nor anticipated by the cited references. Applicants therefore respectfully request allowance of the claims as presented herein.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 500471.

Attached hereto is a marked-up version of the changes made to the specification and/or the claims by the current Amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

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The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this response. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

Harry A. Loder et al.,

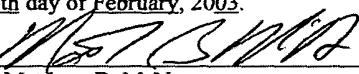
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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Box AF, Commissioner for Patents, Washington, D.C., 20231 on this 14th day of February, 2003.

By 
Name: Matthew B. McNutt



EXPEDITED PROCEDURE
Examining Group Number 2874

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Harry A. Loder et al.

Examiner: Sung H. Pak

Serial No.: 09/643,333

Group Art Unit: 2874

Filed: August 22, 2000

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AMENDMENT AND RESPONSE UNDER 37 C.F.R. 1.116

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Box AF

Commissioner for Patents
Washington, D.C. 20231

Dear Sir/Madam:

This Amendment is replies to the Final Office Action mailed December 17, 2002 in which claims 8-12 and 23-31 were rejected. Claims 8-37 are pending in the application, with claims 13-22 and 32-37 previously withdrawn from consideration. With this Amendment, claims 23 and 30 are amended.

IN THE CLAIMS

Please amend claims 23 and 30 as follows:

8. A fiber optic connecting system comprising:
a backplane housing including a plurality of longitudinal receiving cavities wherein each receiving cavity has a frontal opening;
at least one folding door comprising a hinge plate formed integrally with a pair of biasing members to cover the frontal openings of a pair the plurality of receiving cavities, there being an intervening wall between the pair of receiving cavities; and
means for securing the hinge plate adjacent the intervening wall to provide attachment of the folding door to the backplane housing.

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9. A fiber optic connecting system comprising:
 - a backplane housing including a plurality of longitudinal receiving cavities wherein each receiving cavity has a frontal opening;
 - at least one folding door comprising a hinge plate formed integrally with a pair of biasing members to cover the frontal openings of a pair of the plurality of receiving cavities, there being an intervening wall between the pair of receiving cavities; and
 - a connection adapted to secure the hinge plate adjacent the intervening wall to provide attachment of the folding door to the backplane housing.
10. The fiber optic connecting system of claim 9 wherein the at least one folding door includes at least one latch and the intervening wall has at least one latch seat formed therein, the connection produced by engagement of the latch with the latch seat.
11. The fiber optic connecting system of claim 8 wherein the pair of biasing members comprise a metallic material.
12. The fiber optic connecting system of claim 11 wherein the metallic material is selected from the group consisting of stainless steel alloys and beryllium/copper.
23. (Amended) A backplane connector assembly for making optical connections through a backplane, the connector assembly comprising
 - a backplane housing defining at least one longitudinal receiving cavity through the backplane, the receiving cavity having a frontal opening along the front surface of the backplane member configured to receive a first optical connector and a rear opening along the back surface of the backplane member configured to receive a second optical connector;
 - a single-piece integral spring member foldable frontal door foldable from a single side of the receiving cavity at least covering a center portion of the frontal opening; and

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a single-piece integral spring member foldable rear door foldable from a single side of the receiving cavity at least covering a center portion of the rear opening;
wherein the doors automatically close when an optical connector member is not placed in the respective opening and automatically fold when a connector member is inserted into the respective opening, wherein the front door and the rear door operate independently from each other.

24. The backplane connector assembly of claim 23, wherein at least one of the doors includes an electrically conductive material and the door is electrically grounded.

25. The backplane connector assembly of claim 23, wherein the backplane housing includes a dielectric material and is not electrically conductive.

26. The backplane connector assembly of claim 23, wherein the backplane housing is electrically conductive and is electrically grounded and the doors are non electrically conductive.

27. The backplane connector assembly of claim 23, wherein the doors comprise a foldable spring design that folds into the opening when a connector is inserted into the opening.

28. The backplane connector assembly of claim 23, wherein the doors comprise a spring biased element coupled to a hinge element.

29. The backplane connector assembly of claim 23, wherein the backplane housing defines a plurality of linearly stacked receiving cavities.

30. (Amended) The backplane connector assembly of claim 29, A backplane connector assembly for making optical connections through a backplane, the connector assembly comprising

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a backplane housing defining a plurality of linearly stacked receiving cavities through the backplane, the receiving cavities each having a frontal opening along the front surface of the backplane member configured to receive a first optical connector and a rear opening along the back surface of the backplane member configured to receive a second optical connector;
a single-piece integral spring member foldable frontal door at least covering a center portion of the frontal opening; and
a single-piece integral spring member foldable rear door at least covering a center portion of the rear opening;
wherein the doors automatically close when an optical connector member is not placed in the respective opening and automatically fold when a connector member is inserted into the respective opening, wherein the front door and the rear door operate independently from each other, wherein each door comprises comprising a single stamped metal part having a first wing and a second wing and a hinge portion, and wherein each door in two adjoining linearly stacked receiving cavities comprises one of the wings and the hinge portion is attached to a dividing wall between the two adjoining receiving cavities.

31. The backplane connector assembly of claim 23, wherein the backplane housing includes frame features that assure a tight fit of the doors within the opening in a closed position.